IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
)
Motiwala et al.)
)
Serial No.: 09/766,558)
)
Filed: January 19, 2001)
)
)
For: **METHOD AND APPARATUS FOR**)
EFFICIENT USE OF COMMUNICATION)
RESOURCES IN A COMMUNICATION)
SYSTEM)

Examiner: Shuwang Liu

Group No.: 2634

Docket No. PA000103

CERTIFICATION UNDER 37 CFR § 1.8

I hereby certify that the documents referred to as enclosed herein are being deposited with the United States Postal Service as first class mail on this date February 17, 2005, in an envelope addressed to: Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

<u>February 17, 2005</u>   *Sheryl Schoen* .
Date   Signature
                              By: Sheryl Schoen

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Sir:

APPELLANTS' APPEAL BRIEF UNDER 37 CFR §1.192

In accordance with the Notice of Appeal to the Board of Patent Appeals and Interferences mailed October 18, 2004, in the above-identified U.S. Patent application, Appellants hereby present the Appellants' Appeal Brief under 37 CFR §41.37. The APPELLANTS' APPEAL BRIEF is submitted with copies of each reference discussed, a copy of the Final Office Action and a copy of the Advisory Action as well as the appropriate fees required under 37 CFR §41.20(b)(2).

REAL PARTY IN INTEREST

Qualcomm, Incorporated, of San Diego, California is the real party in interest as the assignee of the above-identified application.

RELATED APPEALS AND INTERFERENCES

No other appeals or interferences are known which will be affected by this appeal.

STATUS OF CLAIMS

The application under appeal includes pending claims 1-43. In the Advisory Action, the Examiner has indicated that claims 1-43 stand finally rejected.

Claims 1, 2, 5, 6, 9-16, 20, 23-27, 30, 31, and 34-40 stand rejected under 35 U.S.C. §102(b) as being anticipated by Honkasalo et al. (US 5,859,843).

Claims 3, 4, 7, 8, 17-19, 21, 22, 28, 29, 32, 33 and 41-43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Honkasalo et al. (US 5,859,843) in view of Kawabe (EP0998052).

STATUS OF AMENDMENTS

Amendments to the claims submitted in a Response dated December 2, 2003 have been entered. No other amendments have been submitted.

SUMMARY OF CLAIMED SUBJECT MATTER

In accordance with 37 CFR § 41.37(v), Appellants provide a brief summary of each independent claim involved in the appeal, where each summary refers to the specification by page and line number and to the drawings by reference number. Appellants note that this "Summary of claimed subject matter" is provided only to assist the Board in identifying some portions of the specification related to the particular claims. In the interest of brevity, each claim summary does not necessarily include all references to all relevant portions of the specification and drawings. Accordingly, omission of any reference to the specification or to the drawings should not be construed in any way as an intent to relinquish claim scope, or as an implication or statement regarding the conformance with 35 U.S.C. §112. Appellants respectfully submit that the claims should not be construed as being limited to the embodiments described or

referenced in any claim summary, and further submit that other embodiments, as well as the Doctrine of Equivalents, may apply in determining claim scope.

Claim 1

The subject matter of claim 1 is directed to a method for processing a frame of data (100). Each of a plurality of channel elements (300) is assigned to demodulate a portion of a data frame (100). (Page 4, lines 20-22; page 6, lines 4-5).The incoming data frame (100) is partitioned into at least a first portion (101) and a second portion (102). (Page 4, lines 20-22). A first channel element is assigned to demodulate data symbols of the first portion (101) and a second channel element is assigned to demodulate data symbols in the second portion (102) of the data frame (100). (Page 5, Lines 3-6). The channel elements (101, 102) are communication resources that are allocated for receiving a data frame (100) where each channel element (101, 102) includes one or more receiving finger resources (204) and a combiner element (204) (Page 8, lines 4-6). A channel element (101, 102), therefore, may include one or more fingers (204) of a RAKE receiver, for example. One or more fingers are assigned to one portion of the data frame and other finger(s) are assigned to another portion of the data frame (100).The portions are demodulated and combined. The specification describes a "channel element" as a "communication resource …allocated for processing a data frame" that "may include one or more fingers for correlating with different multi-path signals. The channel element demodulates the data symbols in each received data frame." (*Application*, page 2, lines 3-6). An exemplary embodiment of a channel element 300 is discussed at page 8, line 4 through page 16, line 14. Partitioning a frame of data into at least first and second portions of data symbols allows the channel elements assigned to the first and second portions to demodulate the data symbols in the data frame more efficiently.

Claim 5

The subject matter of claim 5 is directed to a method for processing a frame of data (100). The frame (100) of data is partitioned into a plurality of portions of data symbols. (Page 10, lines 18-19). A plurality of channel elements (101, 102) are assigned to respectively demodulate the plurality of portions of data symbols. (*Application*, page 10, lines 20-21). Each portion is portioned and demodulated as discussed above with reference to claim 1.

Claim 12

The subject matter of claim 12 is directed to a method for processing a plurality of frames (100) of data. Each of the plurality of frames of data (100) is portioned into a plurality of portions of data symbols. A plurality of channel elements (101, 102) are assigned to the frames of data (100) to demodulate symbols of the plurality of portions of data symbols of each of the frames of data, respectively. (*Application*, page 10, lines 14-21). Each portion is portioned and demodulated as discussed above with reference to claim 1.

Claim 20

The subject matter of claim 20 is directed to an apparatus for processing a frame of data. A finger resource (203) partitions a frame of data (100) into a plurality of portions of data symbols. A plurality of channel elements (101, 102) demodulate data symbols of the portions of data symbols, respectively. (*Application*, page 7, lines 5-21)

Claim 25

The subject matter of claim 25 is directed to an apparatus for processing a plurality of frames of data (100). A finger resource (203) partitions each of the frames (100) of data into a plurality of portions of data symbols. Channel elements (300) assigned to each the frames of data demodulate data symbols of the portions of data symbols of each of the frames (100) of data, respectively. (*Application*, page 8, lines 4-6 and page 9, lines 3-10)

Claim 30

Claim 30 is a means plus function claim with subject matter directed to an apparatus for processing a frame of data (100). The apparatus comprises a means for partitioning the frame of data (100) into a plurality of portions of data symbols and a means for assigning channel elements (300) to demodulate data symbols of portions of data symbols, respectively. Some sections of the specification including the structure or acts corresponding to the means for partitioning the frame of data (100) include: page 8, lines 4-5; page 9, lines 11-18; page 9 line 23 through page 10, line 2. Some sections of the specification including the structure or acts corresponding to the means for assigning channel elements (300) to demodulate data symbols of the portions include: page 8, lines 4-5; page 9, lines 19-23; page 9 line 25 through page 10, line 15.

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Claim 36

Claim 36 is a means plus function claim with subject matter directed to an apparatus for processing a plurality of frames of data (100). The apparatus comprises a means for partitioning each of the frames of data (100) into a plurality of portions of data symbols and a means for assigning channel elements (300) to each of the frames of data (100) to demodulate data symbols of the portions of data symbols of each of the frames (100) of data, respectively. Some sections of the specification including the structure or acts corresponding to the means for partitioning the frame of data (100) include: page 8, lines 4-5; page 9, lines 11-18; page 9 line 23 through page 10, line 2. Some sections of the specification including the structure or acts corresponding to the means for assigning channel elements (300) to demodulate data symbols of the portions include: page 8, lines 4-5; page 9, lines 19-23; page 9 line 25 through page 10, line 15.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants wish the Board of Patent Appeals and Interferences to review the following grounds of rejection on appeal:

1)   Grounds of rejection in rejecting claims 1, 2, 5, 6, 9-16, 20, 23-27, 30, 31 and 34-40 under 35 U.S.C. §102(b) as being anticipated by Honkasalo et al. (US Patent Number 5,859,843).

2)   Grounds of rejection in rejecting claims 3, 4, 7, 8, 17-19, 21, 22, 28, 29, 32, 33 and 41-43 under 35 U.S.C. §103(a) as being unpatentable over Honkasalo et al. (US Patent Number 5,859,843) in view of Kawabe (EP0998052).

ARGUMENT

Appellants respectfully submit that claims 1-43 are allowable over the art cited by the Examiner. Each of the issues presented for review are addressed below.

102(b) Rejection
Claims 1, 2, 5, 6, 9-16, 20, 23-27, 30, 31 and 34-40

Claims 1, 2, 5, 6, 9-16, 20, 23-27, 30, 31 and 34-40 stand rejected under 35 U.S.C. 102(b) as being anticipated by Honkasalo et al. ("Honkasalo").

Appellants respectfully submit that the claims as presented are allowable over the art cited by the examiner. A rejection of a claim for anticipation requires that a single anticipating reference include, within its four corners, all of the elements, limitations, and relationships therebetween of the rejected claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Appellants respectfully submit that each and every element recited in any one of the claims is not found in Honkasalo.

Referring to claim 1 as a representative claim of the claims rejected as anticipated by Honkasalo, claim 1 recites "assigning a first channel element to demodulate data symbols of said first portion of data symbols" and "assigning a second channel element to demodulate data symbols of said second portion of data symbols." Appellants respectfully submit that Honkasalo does not describe all of the limitations of this claim. For example, Honkasalo does not disclose "assigning a first channel element to demodulate data symbols of said first portion of data symbols" and "assigning a second channel element to demodulate data symbols of said second portion of data symbols." Honkasalo discusses a method of transmitting "minor frames" in a "major frame structure". Honkasalo does not discuss assigning different channel elements to demodulate different portions of a frame of data. Honkasalo discloses using multiple Walsh channels to transmit minor frames in parallel. (*Honkasalo,* Column 4, lines 37-55).

In the Office Action dated July 21, 2004, the Examiner attempted to provide support for the assertion that Honkasalo assigns different channel elements to demodulate different portions of a frame by pointing out that, although not discussed in Honkasalo, "[i]t is inherent that the receiver despreads the chips by using the same Walsh code used at the transmitter . . ." (*Office Action dates July 21, 2004*, Page 3, lines 17-18). Appellants respectfully submit that demodulating minor frames using different Walsh codes is not assigning different channel elements to demodulate different portions of a frame. A "channel element" is a "communication resource ...allocated for processing a data frame" that "may include one or more fingers for correlating with different multi-path signals." (*Application*, page 2, lines 3-6). Honkasalo's teaching that minor frames of data are transmitted in parallel using multiple Walsh channels does not suggest that different channel elements are assigned to demodulate different portions of data symbols that are from a common frame of data. Rather, Honkasalo's teaching merely

suggests that the minor frames of data are transmitted on different Walsh channels. Honkasalo teaches nothing about how the different channels are demodulated at the receiver.

Therefore, Honkasalo does not show a method or apparatus that assigns "a first channel element to demodulate data symbols of said first portion of data symbols" and assigns "a second channel element to demodulate data symbols of said second portion of data symbols." Accordingly, Appellants respectfully submit that all of the limitations of any claim of the claims rejected under 35 U.S.C. 102(b) are not found in Honkasalo and that the rejection was not proper.

Rejection under 35 U.S.C. §103(a) – Honkasalo in view of Kawabe
Claims 3, 4, 7, 8, 17-19, 21, 22, 28, 29, 32, 33 and 41- 43

Claims 3, 4, 7, 8, 17-19, 21, 22, 28, 29, 32, 33 and 41- 43 stand rejected under 35 U.S.C. §103(a). Appellants respectfully submit that this rejection is improper and that the claims are allowable. These claims depend from one of the independent claims 1, 12, 20, 25, 30, or 36 which Appellants respectfully submit are allowable as explained above. Accordingly, claims 3, 4, 7, 8, 17-19, 21, 22, 28, 29, 32, 33 and 41- 43 are at least allowable as depending from an allowable base claim.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Appellants respectfully submit that neither Honkasalo, nor Kawabe, nor a combination of the two, teaches or suggests every element of any of the claims rejected under 35 U.S.C. §103(a).

Each of claims 3, 4, 7, 8, 17-19, 21, 22, 28, 29, 32, 33 and 41- 43 depend from an independent claim reciting features similar to the elements discussed above with reference to claim 1. Specifically, claim 1 recites "assigning a first channel element to demodulate data symbols of said first portion of data symbols" and "assigning a second channel element to demodulate data symbols of said second portion of data symbols." Neither Honkasalo, nor Kawabe, nor a combination of the two teach or suggest these features. As discussed above, Honkasalo discusses transmitting minor frames in a major frame structure using Walsh codes and does not discuss assigning different channel elements to demodulate portions of a frame of data. Kawabe discuses processing a plurality of channels by time division multiplexing by a signal processor having a storage means for storing input signals and reading data from the storage means at a higher speed than data is inputted into the storage means. Nowhere in

Kawabe is a teaching or suggestion to assign different channel elements to different portions of a frame of data. Accordingly, Appellants respectfully submit that neither Honkasalo, nor Kawabe, nor a combination of the two, teach or suggest every element of any of claims 3, 4, 7, 8, 18-19, 21, 22, 29, 32, 33 and 42- 43 and that these claims are allowable over the art cited.

Conclusion

Claims 1 - 43 are now pending in the application. Appellants respectfully submit that the pending claims are allowable and that the case is in a condition for allowance.

Please charge Deposit Account No. 17-0026 of QUALCOMM Incorporated in the amount of $500.00. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to said Deposit Account No. 17-0026.

Respectfully submitted,

Date: February 17, 2005   By: _____

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APPENDIX

<u>CLAIMS</u>

1. (Previously presented) In a communication system, a method for processing a frame of data comprising:

partitioning said frame of data into at least a first and second portions of data symbols;

assigning a first channel element to demodulate data symbols of said first portion of data symbols; and

assigning a second channel element to demodulate data symbols of said second portion of data symbols.

2. (Previously presented) The method as recited in claim 1 further comprising:

demodulating said first and second portions of data symbols by said first and second channel elements, respectively.

3. (Previously presented) The method as recited in claim 2 further comprising:

receiving said frame of data via a radio frequency receiver front end;

correlating with at least a data symbol in said frame of data in accordance with timing of at least one assigned finger; and

using a result of said correlating in said first and second channel elements for said demodulating.

4. (Original) The method as recited in claim 2 further comprising:

writing to, and subsequently reading from, demodulated data symbols from said first and second channel elements, a RAM in accordance with a de-interleaving function in said communication system.

5. (Previously presented) In a communication system, a method for processing a frame of data comprising:

partitioning said frame of data into a plurality of portions of data symbols; and

assigning a plurality of channel elements to demodulate data symbols of said plurality of portions of data symbols, respectively.

6. (Previously presented) The method as recited in claim 5 further comprising:
demodulating said plurality of portions of data symbols by said plurality of assigned channel elements, respectively.

7. (Previously presented) The method as recited in claim 6 further comprising:
receiving said frame of data via a radio frequency receiver front end;
correlating with at least a data symbol in said frame of data in accordance with timing of at least one assigned finger; and
using a result of said correlating in said plurality of channel elements for said demodulating.

8. (Original) The method as recited in claim 6 further comprising:
writing to, and subsequently reading from, demodulated data symbols from said plurality of channel elements, a RAM in accordance with a de-interleaving function in said communication system.

9. (Original) The method as recited in claim 5 further comprising:
receiving information related to a data rate of data symbols of said frame of data.

10. (Original) The method as recited in claim 5 wherein the number of said plurality of portions of data symbols is based on a data rate of data symbols of said frame of data.

11. (Original) The method as recited in claim 5 wherein the number of said plurality of channel elements is based on a data rate of data symbols of said frame of data.

12. (Previously presented) In a communication system, a method for processing a plurality of frames of data comprising:
partitioning each of said plurality of frames of data into a plurality of portions of data symbols; and

assigning a plurality of channel elements to each of said plurality of frames of data to demodulate data symbols of said plurality of portions of data symbols of each of said plurality of frames of data, respectively.

13.　(Original)　The method as recited in claim 12 wherein the number of said plurality of channel elements assigned to each frame of data is based on a data rate of the data symbols in each of said plurality of frames of data.

14.　(Original)　The method as recited in claim 12 wherein the number of said plurality of portions of data symbols in each of said plurality of frames of data is based on a data rate of the data symbols in each of said plurality of frames of data.

15.　(Original)　The method as recited in claim 12 further comprising:

receiving information related to a data rate of data symbols of each of said plurality of frames of data.

16. (Previously presented)　The method as recited in claim 12 further comprising:

demodulating the data symbols in each of said plurality of portions of data symbols of each of said plurality of frames of data by said plurality of assigned channel elements, respectively.

17.　(Original)　The method as recited in claim 12 further comprising:

receiving said plurality of frames of data via a radio frequency front end.

18. (Previously presented)　The method as recited in claim 16 further comprising:

assigning at least a finger to each of said plurality of frames of data;

correlating with at least a data symbol in each of said plurality of frames of data in accordance with timing of said least finger assigned to each of said plurality of frames of data; and

using a result of said correlating in said plurality of channel elements for said demodulating.

19.　(Original)　The method as recited in claim 16 further comprising:

writing to, and subsequently reading from, demodulated data symbols from said plurality of channel elements, a RAM in accordance with a de-interleaving function in said communication system.

20. (Previously Presented) In a communication system, an apparatus for processing a frame of data comprising:

a finger resource for partitioning said frame of data into a plurality of portions of data symbols; and

a plurality of channel elements for demodulating data symbols of said plurality of portions of data symbols, respectively.

21. (Original) The apparatus as recited in claim 20 further comprising:

a radio frequency receiver front end for receiving said frame of data;

wherein said finger configured for correlating with at least a data symbol in said frame of data in accordance with timing of at least one timing hypothesis.

22. (Original) The apparatus as recited in claim 20 further comprising:

a RAM for writing, and subsequently reading, demodulated data symbols from said plurality of channel elements in accordance with a de-interleaving function in said communication system.

23. (Original) The apparatus as recited in claim 20 wherein the number of said plurality of portions of data symbols is based on a data rate of data symbols of said frame of data.

24. (Original) The apparatus as recited in claim 20 wherein the number of said plurality of channel elements is based on a data rate of data symbols of said frame of data.

25. (Previously presented) In a communication system, an apparatus for processing a plurality of frames of data comprising:

a finger resource for partitioning each of said plurality of frames of data into a plurality of portions of data symbols; and

a plurality of channel elements assigned to each of said plurality of frames of data to demodulate data symbols of said plurality of portions of data symbols of each of said plurality of frames of data, respectively.

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26.   (Original) The apparatus as recited in claim 25 wherein the number of said plurality of channel elements assigned to each frame of data is based on a data rate of the data symbols in each of said plurality of frames of data.

27.   (Original) The apparatus as recited in claim 25 wherein the number of said plurality of portions of data symbols in each of said plurality of frames of data is based on a data rate of the data symbols in each of said plurality of frames of data.

28.   (Original) The apparatus as recited in claim 25 further comprising:
        a radio frequency front end for receiving said plurality of frames of data.

29.   (Original) The apparatus as recited in claim 25 further comprising:
        a RAM for writing, and subsequently reading, demodulated data symbols from said plurality of channel elements in accordance with a de-interleaving function in said communication system.

30.   (Previously presented) In a communication system, an apparatus for processing a frame of data comprising:
        means for partitioning said frame of data into a plurality of portions of data symbols; and
        means for assigning a plurality of channel elements to demodulate data symbols of said plurality of portions of data symbols, respectively.

31.   (Previously presented) The apparatus as recited in claim 30 further comprising:
        means for demodulating said plurality of portions of data symbols by said plurality of assigned channel elements, respectively.

32.   (Previously presented) The apparatus as recited in claim 31 further comprising:
        means for receiving said frame of data via a radio frequency receiver front end;
        means for correlating with at least a data symbol in said frame of data in accordance with timing of at least one assigned finger; and
        means for using a result of said correlating in said plurality of channel elements for said demodulating.

33.   (Original) The apparatus as recited in claim 31 further comprising:

means for writing to, and subsequently reading from, demodulated data symbols from said plurality of channel elements, a RAM in accordance with a de-interleaving function in said communication system.

34.   (Original) The apparatus as recited in claim 30 wherein the number of said plurality of portions of data symbols is based on a data rate of data symbols of said frame of data.

35.   (Original) The apparatus as recited in claim 30 wherein the number of said plurality of channel elements is based on a data rate of data symbols of said frame of data.

36. (Previously presented) In a communication system, an apparatus for processing a plurality of frames of data comprising:

means for partitioning each of said plurality of frames of data into a plurality of portions of data symbols; and

means for assigning a plurality of channel elements to each of said plurality of frames of data to demodulate data symbols of said plurality of portions of data symbols of each of said plurality of frames of data, respectively.

37.   (Original) The apparatus as recited in claim 36 wherein the number of said plurality of channel elements assigned to each frame of data is based on a data rate of the data symbols in each of said plurality of frames of data.

38.   (Original) The apparatus as recited in claim 36 wherein the number of said plurality of portions of data symbols in each of said plurality of frames of data is based on a data rate of the data symbols in each of said plurality of frames of data.

39.   (Original) The apparatus as recited in claim 36 further comprising:

means for receiving information related to a data rate of data symbols of each of said plurality of frames of data.

40. (Previously presented) The apparatus as recited in claim 36 further comprising:

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means for demodulating the data symbols in each of said plurality of portions of data symbols of each of said plurality of frames of data by said plurality of assigned channel elements, respectively.

41.   (Original) The apparatus as recited in claim 36 further comprising:
means for receiving said plurality of frames of data via a radio frequency front end.

42. (Previously presented) The apparatus as recited in claim 40 further comprising:
means for assigning at least a finger to each of said frame of data of said plurality of frames of data;
means for correlating with at least a data symbol in each of said plurality of frames of data in accordance with timing of said least finger assigned to each of said frame of data of said plurality of frames of data; and
means for using a result of said correlating in said plurality of channel elements for said demodulating.

43.   (Original) The apparatus as recited in claim 40 further comprising:
means for writing to, and subsequently reading from, demodulated data symbols from said plurality of channel elements, a RAM in accordance with a de-interleaving function in said communication system.